The Occupational Outlook

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in cooperation with
VETERANS ADMINISTRATION

The Occupational Outlook

UNITED STATES DEPARTMENT OF LABOR

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Bureau of Labor Statistics

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This publication is issued to provide counselors with current information on employment trends and outlook, based primarily on the continuous research and statistical programs of the Bureau of Labor Statistics. It supplements and brings up to date information in the Occupational Outlook Handbook, and supersedes the Occupational Outlook Review, formerly prepared for the Veterans Administration by the Bureau of Labor Statistics. It is prepared with the advice and assistance of the

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A BRIEF LOOK AT THE OUTLOOK

by Helen Wood

This review of occupational outlook highlights is made from the vantage point of the research results built up during the preparation of the 1957 edition of the Occupational Outlook Handbook. This book, which has just been published, discusses the employment outlook in more than 500 occupations and 25 major industries. It also presents information on the nature of the work done in each field, qualifications needed for employment, earnings, and many related topics.

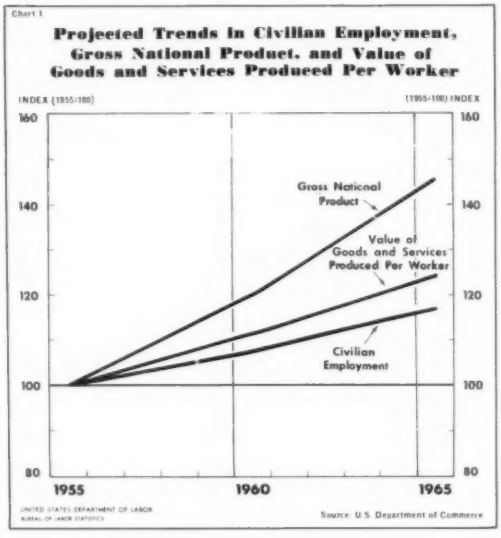
To summarize the major findings of the research conducted in preparation for the Handbook would be a task far beyond the scope of the present article. A short look at some of the general conclusions and insights which have emerged from it may be illuminating, however.

General View of Economic Future

The first step in occupational outlook studies is to consider what the general trends in the economy are likely to be in future years. One inescapable conclusion emerges from this overall analysis: If the economic trends of the post-World War II period continue, we can be optimistic about the future. Most signs point to great further expansion in employment and production and continued improvement in the economic well-being of most Americans in the long run. Among the factors leading to this conclusion are the prospective large increase in population and the growth in per capita income.

An important measure of the country's economic progress is the Gross National Product, the value of all final goods and services produced in the United States. Since World War II, the GNP has been rising considerably faster than employment. Computed in dollars having the same purchasing power, GNP increased by 38 percent between 1947 and 1955, compared with a rise of only 9 percent in civilian employment. This differential was made possible by the increasing productivity of American industry and agriculture during a decade of rapid technological advances. These advances stemmed in large part from the research and development programs of American industry, which have been greatly increased in recent years (as described in the article on white-collar employment in manufacturing elsewhere in this issue). Since industry has continued to intensify its research effort, there is every reason to anticipate continued advances in productivity, though possibly at a somewhat slower rate than in recent years. Such increases are assumed in the projections in chart 1, which suggest an approximate increase of 50 percent in the GNP between 1955 and 1965 and a gain of about 25 percent in the value of goods and services produced per worker.

These projections--based on the assumption of high employment condi-



tions, which are now a matter of national policy--are greatly influenced by the anticipated large increase in the country's population and labor force. The rise in population, expected to amount to about 25 million between 1955 and 1965 and another 30 million by 1975, will create expanded demand for all kinds of goods and services, construction, and capital investment. Owing to the increasing population and the greater participation of some groups in the labor force, the number of workers is expected to rise by about 10 million by 1965 and another 15 million in the following 10 years. A decrease in average annual hours of work was assumed in the projections. This might take the form of somewhat shorter weekly working hours or, in many cases, more holidays and longer vacations.

Employment Prospects in Major Industries

This potentially bright economic future is expected to mean expanding employment in manufacturing and all other broad industry divisions with the exception of agriculture. Farm employment has had a persistent downward trend for several decades despite the rising demand for farm products, because farmers have been able to obtain larger crop yields per worker through greater use of farm machinery and many types of scientific aids. Between 1947 and 1956, farm employment declined from 8.3 to 6.6 million, and it may drop below 5 million by 1975.

Outside of agriculture, the chief question with regard to future employment trends is not whether they will be upward but how rapid the rise will be. The rate of growth in employment has varied considerably among industries during the past decade. In manufacturing industries as a group, employment increased by 11 percent between 1947 and 1956. In several other industry divisions, the rate of increase was much greater; in construction and in service industries, about 50 percent; in finance, insurance, and real estate, 38 percent; in government, 31 percent; and in trade, 23 percent. On the other hand, there was practically no change in employment over the decade in the transportation and public utilities industries as a group, and mining employment actually decreased by 14 percent.

The individual industries which make up these broad industry groups have also had divergent employment trends. The decline in total mining employment, for example, reflects a drop in the number of coal mine workers, which was so great as to more than offset a sizable employment gain in the crude petroleum and natural gas industry and smaller increases in metal and nonmetallic mining employment. In the transportation and public utilities division, employment on interstate railroads declined by about 24 percent between 1947 and 1956, and employment on local railways and bus lines declined even more--about 40 percent. These employment declines were offset, however, by gains in the trucking and warehousing, air transportation, telephone, and electric light and power industries. Within manufacturing, substantial employment increases occurred in a few industries, such as electrical equipment and chemical products; there was moderate employment growth in a larger number of industries; but in 38 of the 89 industries in manufacturing, actual decreases in employment occurred, notably in textiles and leather products.

In the years ahead, employment will continue to rise in the vast majority of industries. In at least one industry where employment has been dropping, a change for the better is anticipated; the long-term downward trend in coal mine employment is apparently leveling off, and the number of workers in the mining industry division as a whole may increase moderately in coming years. Railroad employment is expected to go on dropping moderately, while air transportation and trucking employment continue to rise. Manufacturing as a whole is expected to maintain its relative position as a major source of employment for the Nation's working population. Within manufacturing, however, there will, as in the past, be considerable differences in rate of growth among individual

industries. Construction is expected to have one of the most rapid increases in employment recorded for any industry division. Another industry group in which employment will probably rise faster than the average for all industries is finance, insurance, and real estate.

Employment Prospects in Major Occupations

To staff the Nation's expanding industries will obviously require increased numbers of workers in a great variety of occupations. The rise in employment will probably be most rapid in white-collar occupations (as indicated in the article White-Collar Employment in Manufacturing on page 8). However, increases are anticipated also in many blue-collar occupations, especially skilled trades.

Trends in Blue-Collar Occupations. The one large area of nonfarm employment which is expected to contract is unskilled labor. The proportion of workers in occupations of this type has been dropping steadily (from about 12 percent of the total labor force in 1910 to approximately half that figure in 1955), as mechanical equipment has replaced manual labor in work such as ditchdigging and handling and moving of heavy objects. With further mechanization, employment in laboring jobs will continue to decline. By 1975, the proportion of workers in this least skilled area of employment may be as low as 4 percent.

Semiskilled operatives, at the next higher level in training and skill, are the largest of all occupational groups. Historically, they have also been one of the fastest growing; whereas in 1910, they included only 14 percent of the work force, by 1955, they had come to represent 21 percent. In the early days of mechanization, the introduction of new machinery in factories often meant the replacement of skilled craftsmen, as well as laborers, by semiskilled machine operators. Moreover, the growth of giant mass-production industries, such as automobile manufacturing, created great numbers of operative positions for which there were no previous counterparts. Recent technological advances of the type popularly known as automation are having a different effect, however; they make possible great gains in production without corresponding increases in the number of semiskilled machine operators. The introduction of automation in factories and business establishments will be a slow process, likely to extend over many years. Because of it, employment of semiskilled operatives will probably grow more slowly during the next 10 years than in recent decades. Nevertheless, a substantial share of the increase in nonagricultural employment expected in this country between now and 1975 will be in operative jobs.

For skilled workers, a more rapid rate of growth in employment opportunities is anticipated, although the total number of craftsmen will remain smaller than the total number of semiskilled workers during the forseeable future. In 1955, craftsmen and foremen represented about 1 out of every 8 workers, a higher proportion than in any census year during the past half century. This new upward trend in employment of skilled workers was due to basic economic and technological factors, including automation. It is probable that the gains will continue and that, during the next few decades, employment of skilled workers will grow at a somewhat faster rate than the labor force as a whole.

The group of skilled workers which is growing fastest is mechanics and repairmen. The number of such workers in the United States nearly doubled between 1940 and 1950 and will continue to rise rapidly, although probably not as fast as during the 1940's. Workers of this type are needed not only to install and maintain new automatic machinery and electronic equipment in factories and large business establishments but also to install and service the constantly growing amount of evermore complex equipment in use by private households and the Armed Forces.

Employment gains are anticipated also in most other skilled occupations.

The rate of growth for tool and die makers and for some of the construction trades such as carpenters, bricklayers, and cement and concrete masons will be nearly as fast as for mechanics and repairmen. For other trades--for example, blacksmiths and molders--gains will be slower.

Trends in White-Collar Occupations. Workers in white-collar occupations are divided into three main groups--clerical and sales personnel, proprietors and managers, and professional and kindred workers.

Clerical and sales workers are by far the largest of these groups. In recent decades, they have also had another distinction--that of increasing faster than any other major occupational group. In 1910, clerical and sales personnel represented 10 percent of all workers; in 1955, they included twice as high a proportion of the country's greatly expanded work force. Professional occupations, which ranked second in rate of growth, increased their share of the labor force from about 5 percent to 9 percent over this 45-year period.

The outlook with regard to future employment trends in clerical occupations is clouded by current technological developments. In the past, technological innovations have often tended to increase rather than diminish the demand for clerical personnel. Because of the typewriter, and the stimulus its speed and ease of operation gave to business correspondence and other paper work, 1.6 million secretaries, stenographers, and typists are now employed in the United States. It was once feared that the introduction of dial phones might mean greatly reduced employment of telephone operators, but the subsequent expansion of telephone service has led, instead, to slight increases in employment in the occupation during the past few years.

From now on, however, technological developments may retard the growth of clerical employment. Relatively few of the new, giant electronic computers are in use as yet. As these are installed they can greatly reduce the number of clerical workers needed to handle a given volume of business--especially in industries such as banking and insurance which have vast clerical operations--and enable these businesses to further expand their services. This development will have to be watched carefully. Present indications are that the introduction of electronic computers and other new equipment will proceed slowly, that their effect on clerical employment will likewise be slow, and that it will be felt chiefly in the more routine jobs. Since continued growth in employment is expected in many occupations in the clerical and sales category, the occupational group as a whole will grow, though at a slower rate than in the past 15 years.

Professional and technical workers have recently taken over the distinction of being the fastest growing occupational group. The professions which will grow most rapidly are, in general, the newer ones--engineering, the natural sciences, accounting, and a number of smaller fields such as psychology. The four "traditional" professions--teaching, medicine, law, and the ministry--will also grow, but more slowly, as they have in past years. Between 1940 and 1950, employment in these four professions taken together increased by only 13 percent. This contrasted with an increase of 37 percent in all professional and kindred occupations as a group and with much more rapid gains in some professions (90 percent in engineering, for example).

Even more rapid growth in employment is anticipated in technical and related occupations. Between 1940 and 1950, the number of technicians at work in the country increased by 132 percent, and very large employment increases were reported also in some other occupations of a technical nature (for example, radio operators, 160 percent; surveyors, 90 percent; draftsmen, 68 percent). The growth in employment of technicians has been stimulated by the continuing shortages of fully qualified engineers, scientists, doctors, and nurses and the consequent demand for workers who can take over some of the more routine duties performed by these professional personnel.

The basic reason for the development of technician occupations is, however, the increasingly complicated nature of present day technology, which has created a demand for personnel with the combination of basic scientific training and manual skill characteristic of technicians.

Replacement Needs. The many occupations in which employment is expected to grow rapidly will, of course, have openings in entry positions and will frequently offer favorable opportunities for advancement on the job. It is important to remember, however, that the need to replace workers who retire, die, or leave their occupations for other reasons is generally a much larger source of openings than newly created jobs. Rarely do occupations grow fast enough so that the reverse is true. Even occupations which are declining in size may offer employment opportunities to many young people.

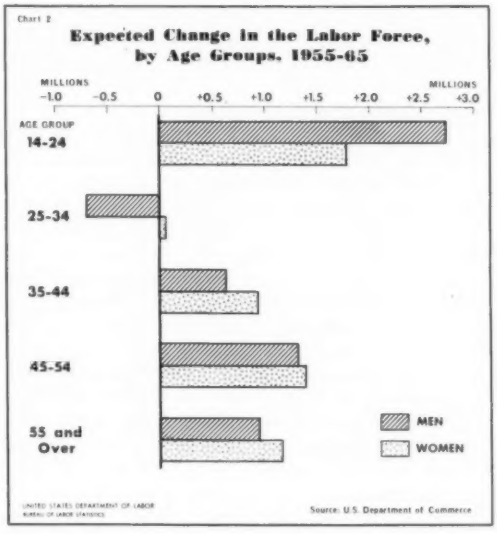
In occupations where most of the workers are men, the death and retirement rate is generally between 1 and 4 percent per year. In women's occupations, the rate is usually higher, because so many women leave jobs to be married and assume family responsibilities. In addition, many job openings are known to arise owing to transfers of workers from one occupation to another, although no comprehensive statistics are yet available on the movement of workers among occupations.

Supply of Personnel

How many workers are likely to be available in coming years to staff newly created jobs and meet replacement needs? The first general answer to this question is that the number of men of prime working age (25-44 years) will not increase at all between 1955 and 1965. In fact, the number of male workers aged 25-34 will be about 700,000 lower in 1965 than 10 years previously, a drop which will more than offset the increase. Among women, the number of workers aged 25-34 will be very little larger at the end than at the beginning of the decade, though a fairly substantial increase in the number of working women aged 35-44 is anticipated.

These findings--that increases in the number of workers aged 25-44 will be small up to 1965 and will be limited to women--are of obvious importance in view of the expanding demand for personnel expected in most industries. A marked rise in the number of workers past 45 lies ahead, however (as shown in chart 2), and this points to the need for employers to utilize these experienced workers and to reexamine hiring practices which shut out older workers. Furthermore, the outlook for young workers will be affected by a rapid rise in the number of new entrants into the labor market when the great numbers of babies born during and since World War II begin to graduate from high school and college.

The increase in college graduations is expected to be gradual during the remainder of the 1950's but will accelerate thereafter. Projections prepared by the U. S. Office of Education in March 1956 indicate that the number of bachelor's degrees awarded will mount from 311,000 in 1956 to 437,000 in 1960, 567,000 in



1965, and 766,000 in 1970. The numbers of master's and doctor's degrees awarded annually may nearly double between 1956 and 1965. These estimates allow not only for the expected increases in college-age population but also for a moderate continued rise in the proportion of young people entering college. They assume that facilities will be adequate to provide college training for qualified students desiring it.

How the new graduates will be distributed among fields of study is uncertain, in view of the many personal and environmental factors which will influence their selection of major subjects. The probability is, however, that enrollments and graduations will increase sharply in most fields where educational facilities are enlarged enough to permit this--leading to a corresponding rise in the numbers of new workers seeking to enter most professions and administrative occupations. This prospect raises the possibility of increasing competition during the 1960's for the better professional positions in at least some fields of work.

Educational Requirements for Employment

Since many types of information on occupations are needed in vocational counseling, the occupational outlook research program of the U. S. Department of Labor's Bureau of Labor Statistics extends to many subjects besides the employment outlook. One important topic, covered in the reports on each field of work, is the educational and other requirements for employment.

That educational requirements are rising in a great number of occupations is a major finding of the research in this area. In many professions, the period of college education customarily required for entrance is now substantially longer than it was three or four decades ago, and promises to lengthen further. Medicine probably provides the best known illustration of this trend. A generation ago, 6 years of college and 1 year of internship were considered adequate preparation for the practice of medicine. Today, at least 8 years of training beyond high school are required and 10 years are customary; to enter a speciality may require another 2 to 4 years. In addition, the range of occupations for which a college degree is required or highly advantageous is widening. Thus, librarianship was largely taught through vocational training agencies prior to 1923; now 4 years of undergraduate preparation plus 2 years of graduate work in a school of library science is the usual requirement. New college graduates are now given preference for many executive trainee, sales, and other positions in industry, which either did not exist a few decades ago or would have been filled by promotion of employees selected on the basis of their experience and personal characteristics rather than of their educational background.

High school graduation has become the minimum educational standard for employment in most clerical positions, apprenticeships, and many other types of work. Students who drop out of school before graduation will be increasingly handicapped in competing for jobs above the manual-labor or semiskilled level.

A basic reason for the rise in educational requirements in this wide variety of occupations is the growing complexity of our industry and technology, which is increasing the amount of knowledge and technical skill required for efficiency in many fields of work. Many other factors have contributed, however, among them the rise in the proportion of people with a high school or college education. As high school and college graduations mount during the 1960's, the trend toward higher educational requirements will probably be reinforced, and an appropriately advanced education will become of still greater importance in competing for jobs and promotions.

Some Implications

The developments briefly sketched in this article, particularly the rapid

expansion in professional and technical occupations and the decline in laboring jobs, add up to a continuing and persistent increase in the number and proportion of workers in occupations requiring extensive education and training. Furthermore, educational requirements for employment are rising within occupations, as described above. There is and will continue to be even more reason than in the past for young people to resist the lure of blind-alley jobs offering relatively high initial rates of pay and obtain as much education and training as possible.

That education pays off financially is indicated by the average incomes of people with different levels of education.[1] Direct financial advantage is, however, only one of many cogent reasons for obtaining as much education as is consistent with the individual's abilities and interests. The length of a professional worker's educational preparation greatly influences his future opportunities for advancement and for transfer to jobs outside one narrow specialty. Similarly, skilled workers have much greater flexibility and a wider range of job possibilities than people who can perform only one semiskilled operation. In view of the dynamic and changing nature of our economy and technology, this flexibility may be of great importance to a worker's long-range job security and advancement.

[1] See What Good is a High School Diploma? (in The Occupational Outlook, February 1957, p. 39); see also The Occupational Outlook Handbook, 1957 edition, p. 46.

WHITE-COLLAR JOBS IN MANUFACTURING

by Herman Travis

White-collar workers--professional, clerical, sales, and administrative workers--have been increasing both in number and as a proportion of the Nation's work force. The Census Bureau reports that the number of white-collar workers rose from 19.8 million in January 1947 to 26.3 million in January 1957, an increase of 33 percent, while the remainder of the work force increased less than 3 percent. At the beginning of this period, they amounted to 34 percent of the Nation's labor force; at the end, 40 percent.

Although we often think of heavy industry, such as manufacturing, as primarily a field for manual workers, actually nearly 4 million jobs in manufacturing are white-collar or "nonproduction" jobs, according to Bureau of Labor Statistics data, and the number and proportion of these jobs are increasing.

Nonproduction workers are needed to organize and direct, service, conduct research and maintain records in manufacturing operations. Nonproduction workers include executives; finance, accounting, legal, and personnel officers; professional and technical workers; salesmen; sales delivery, advertising, credit, and collection personnel; clerks, stenographers, and others performing officework; and medical workers in plant dispensaries and health units. By and large, nonproduction workers are what we commonly call white-collar workers, but there are some exceptions. For example, plant cafeteria workers and certain construction workers on factory payrolls who engage in building major additions or making major alterations to the plant are also considered as indirect on nonproduction workers.

About 1 of every 5 factory workers is a nonproduction worker. Of the 16.9 million factory workers in 1956, 13.2 million were directly involved in production activities and 3.7 million were employed in indirect or nonproduction functions.

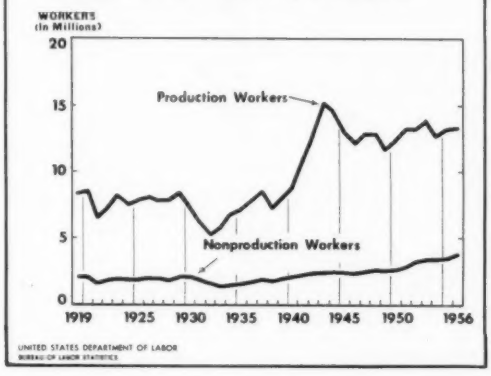
Nonproduction Worker Employment Trends

Over the 38 years for which data are available, there have been significant changes in the ratio between nonproduction and production workers in manufacturing. Until the end of World War II, the changes were connected with economic cycles of boom and depression and resulted primarily from large fluctuations in the number of production workers, while the nonproduction work force remained relatively stable. More recently, however, there has been a small but steady increase in the proportion of nonproduction workers unrelated to cyclical changes in production worker employment. (See chart 1.)

The remarkable qualities of this increase have been its persistence for more than a decade and also its contribution to the overall rise in factory employment. During the postwar decade,

Chart 1.

Factory employment of white-collar (nonproduction) workers in relation to production workers, 1919-56....



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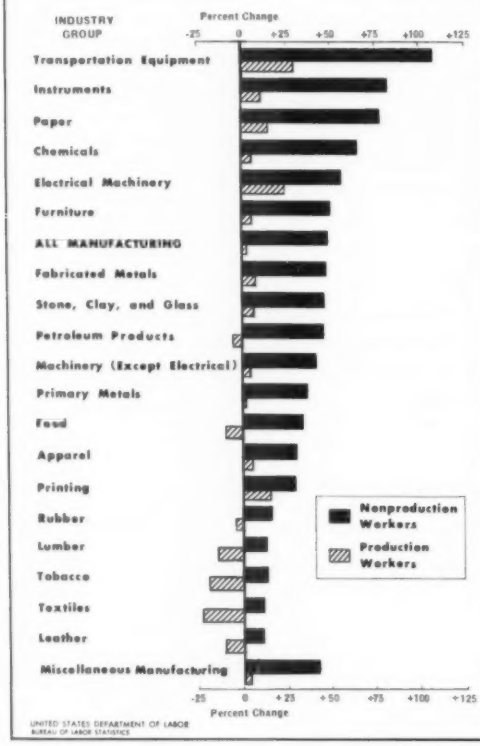
the growth in the number of nonproduction workers has been considerably greater than that of production workers.

Before World War II, the number of nonproduction workers in factories showed less change from year to year than the number of production workers. In bad years, production workers were laid off, while most of the nonproduction workers were retained to carry out operations which were still necessary and also to preserve the managerial and office staffs whose experience was often more difficult to replace than that of production workers. In good years, large numbers of production workers were taken on while the number of nonproduction workers increased only slightly; overhead functions did not expand greatly, and any additional work was usually handled by the existing staff.

Chart 2.

White-collar jobs increased more than production jobs in every manufacturing industry, 1947-56....



During World War II, there was a large increase in the number of overhead workers, but their proportion to total factory employment fell sharply because so many more production than nonproduction workers were hired for large-scale defense production. But when factory employment was cut back at the end of the war, there was very little change in the number of overhead workers; the number which had been added during the war remained. Since the war, there has been a slow but fairly steady increase in the number of overhead workers and a smaller increase in production workers. The rate of increase of nonproduction workers since the end of World War II has been about 1 5 times as great as that of production workers; three-quarters of the total gain in factory employment from 1947 to 1956 was contributed by nonproduction workers.

This increasing proportion has been pervasive; it occurred in all manufacturing industries. Even though some of these industries reported a decline in the employment of production workers since 1947, each of the 21 major industry groups showed an increase in the number of nonproduction workers. The gain in indirect workers was small in some industries, such as leather, textiles, tobacco and lumber, and comparatively large in others, such as transportation equipment, instruments, paper, chemicals, and electrical machinery. In each industry, however, the gain in the number of nonproduction workers was greater than the gain--if any--in production workers. (See chart 2.)

Factors in the Growth of Nonproduction Workers

What has caused this gradual rise in the number of overhead workers? The factors commonly connected with the rise are: (1) Increased research and development activity and the growing use of

technically trained workers; (2) growth in investment by industry in new plant and equipment; and (3) more paperwork to meet the needs of management and Government, and an increase in service and organization functions within the company.

Research and Development Activity. One of the outstanding developments of the postwar period has been the expansion of research and development activity into an important function in American industry, and this has been accompanied by increasing employment of scientists, engineers, and other technically trained workers--not only in research but also in design, production, sales, and other activities. In 1953, total research and development activity conducted by private industry cost $3.7 billion, of which about 95 percent was spent by manufacturing establishments. In January 1954, there were approximately 150,000 engineers and scientists and about 100,000 technicians engaged in research and development in about 14,000 manufacturing firms. There were, in addition, almost 300,000 engineers engaged in other work in factories. The 450,000 engineers and scientists and 100,000 technicians--nearly all of whom are counted as nonproduction workers--made up one-sixth of all nonproduction workers.

It is difficult to measure the increase in the number of research and development workers from one year to another because the figures that are available usually cannot be compared directly; but there are a number of indications that the increase has been considerable. For example, a survey shows an increase of about 45 percent in research and development expenditures between 1951 and 1953. Between 1953 and 1954, another increase of 12 percent is reported.[1]

More evidence of increasing technical activity and employment is contributed by the figures on the number of engineers who are graduated from American schools each year. According to the Office of Education of the U. S. Department of Health, Education, and Welfare, in the 10 years between 1947 and 1956, American colleges graduated 315,000 engineers, compared with only 125,000 in the 10 years between 1932 and 1941. A major portion of these men took jobs in manufacturing industries.

New Plants and Machines and More Efficient Production. Heavy investment in new plants and machines since World War II has also been a factor in the relatively large increase in nonproduction workers. In the 10 years following the war, manufacturing industries invested more than $100 billion in new plants and equipment.

These record amounts invested in better tools of production, plus the "payoff" provided by research and development in terms of improved methods of production and types of machinery, have greatly increased the output of the production worker. Only a few more production workers now produce many more things for our larger population. The Bureau of Labor Statistics estimates that between 1947 and 1953, the average production worker in manufacturing turned out an average of 3 to 3.6 percent more goods each year than the year before; about 4.5 percent more each year from 1953 to 1955; and from 1 to 2.5 percent more between 1955 and 1956.

Between 1947 and 1956, the total increase in the hourly output of production workers amounted to 36 percent. As a result of this increase, only 3 percent more production workers, working only 2 percent longer hours, were able to produce 43 percent more goods.

Larger investment expenditures, by raising the productivity of production workers, have reduced the need for larger numbers of these workers to produce the greater quantities of goods we require. In addition, record investment expendi-

[1] The preceding discussion of research and development activity is based largely on Science and Engineering in American Industry--Final Report on a Survey of Research and Development Costs and Personnel in 1953-54 (prepared for the National Science Foundation by the U. S. Department of Labor, Bureau of Labor Statistics, 1956, Bull. NSF 56-16).

tures have increased the need for nonproduction workers to develop, design, build, and equip the new plants and plant additions which make greater productivity possible.

Records, Management, and Service Functions. Scientific management and organized production techniques require records. Recordkeeping is also required for tax purposes and to provide information for a number of government and public needs. There has also been an increase in activities related to employee relations--retirement and pension programs, grievance handling and labor relations, counseling, safety education, credit unions, and suggestion award programs. Increases in these recordkeeping and management activities have required additional nonproduction workers.

The Outlook

Factors which have increased the proportion of nonproduction workers in manufacturing--greater research and development activity, larger capital expenditures, and expanded recordkeeping and overhead functions--seem likely to continue to operate with even greater intensity. There are, however, some influences operating to offset the continued growth in the number and proportion of white-collar workers. The greater use by industry of data-processing machines for clerical operations, such as inventory control, payroll preparation, and bookkeeping, is likely to offset, to some extent, the increasing need for clerical workers in these functions. These engineering improvements have barely been applied to the office as yet. When they come to be applied more widely, the rate of growth in white-collar employment may slacken, but it still seems reasonable to expect a continuation of this relatively rapid growth over the next few years.

This expected growth has important implications for the employment outlook in a wide range of occupations. More scientists, research technicians, executives, accountants, marketing specialists, and so on will be needed by manufacturing firms. More preparation will be required of those joining factory staffs in nonproduction functions, because white-collar work generally calls for more formal education and training than production jobs. High school graduation is almost a "must," and for many white-collar jobs specialized college and postgraduate training are required.

OCCUPATIONS IN WORK WITH THE BLIND

by Margaret L. Plunkett

Occupational opportunities that exist in special service fields are sometimes overlooked by those who are planning careers. One such field is that of services to blind individuals. This field is also noteworthy for the substantial number of opportunities it offers to visually handicapped people. An exhaustive study of professional, administrative, and technical workers in voluntary and public agencies that were serving the blind in the United States in 1955 was recently completed by the Bureau of Labor Statistics.[1] It indicates that in this relatively small field there are a wide variety of jobs in such broad fields as teaching, social casework, vocational counseling, recreation, and agency administration, as well as in more specialized occupations associated with this type of work, like home teachers, vending stand representatives, braille transcribers and proofreaders, house parents, work shop instructors, and guide-dog trainers. The variety of occupations in the field is suggested by the fact that 50 distinct types of service, in 8 major fields, were reported by cooperating agencies.

The focus of the Bureau's study was on personnel of agencies whose primary purpose is to serve the "legally blind"[2] or which employ specialized personnel for service to this group. Of the 400 agencies that met this definition, 181 were voluntary or private, and 219 were public agencies. The public agencies included specialized State agencies for the blind, residential schools, public schools which have programs of education for blind with sighted children, Veterans Administration hospitals which have special facilities and programs for the blind, general public welfare or vocational rehabilitation agencies specializing in work for the blind, and libraries distributing braille or talking books. The private agencies rendered a wide variety of services, but in many cases their services were less specialized than those of public agencies. In order to pinpoint the duties involved in this distinctive field, individual paid employees were asked to describe what they did on the job, and agencies were asked to furnish formal job descriptions.

Although there were almost a dozen large private agencies (employing 50 or more persons in work for the blind), the bulk of the professional, administrative, and technical jobs were found in the public agencies. Only one-fourth of the covered employment was in the private agencies. Private agencies, on the other hand, rely very heavily on unpaid volunteers, reporting about 1,500 more volunteers than paid workers. The proportion of professional, administrative, and technical workers to all workers is also substantially higher in the public agencies—59 percent compared with 42 percent. More than 80 percent of these workers in public agencies are employed in the specialized State agencies for the blind and in the residential schools. This will indicate to those interested in this field of service where the concentration of job opportunities lies.

Sixty percent of all the employees who replied to the Bureau of Labor Statistics questionnaire were women. They predominated in the various teaching oc-

[1] For the full report, see National Survey of Personnel Standards and Personnel Practices in Service for the Blind, 1955, available from either the Bureau of Labor Statistics or the American Foundation for the Blind, 15 West 16th Street, New York, N. Y. The report consists of 150 pages, including 103 tables. An appendix contains job descriptions, a list of agencies, and questionnaires used.

[2] A person is considered legally blind, if with correcting glasses, he sees only at a distance of 20 feet what a person with normal vision sees at a distance of 200 feet. Persons defined in this report as "visually handicapped" are those whose visual impairment, with correcting glasses, is still substantial (20/70-20/200) but not of sufficient severity to meet the test of "legally blind."

cupations, social casework, and as house parents and nurses. Men were most numerous in all the medical and most administrative positions, and as vocational teachers, vocational counselors, orientors, industrial employment agents, and in the various workshop and guide-dog occupations. About 6 percent of the workers were nonwhite, and most of these were employed in the southern States and in the Territories.

Opportunities for Handicapped Workers

Thirty percent of the workers had some form of visual impairment, of whom about half were totally blind. The professional group had the highest proportion of the totally blind and also higher proportions of workers with other visual handicaps. Only 23 individuals out of the more than 900 with visual impairment had suffered loss of sight through military service.[3] The great majority of the blind or otherwise visually handicapped workers had had these impairments from infancy or youth; among the totally blind it was most common for the onset of visual difficulties to have occurred at ages between 6 and 17 years, whereas among those with less severe impairment it generally occurred earlier. These people have been able to adjust successfully to visual impairments that occured mainly in their childhood or youth and their training, in the light of these impairments, was probably geared toward eventual achievement in professional, administrative, or technical fields.

In a few occupations, like home teacher and industrial employment agent, severe visual handicap is considered almost a necessary qualification in employment. This is easy to understand when one considers that the home teacher's main duty is to teach the housebound blind the techniques of daily living and simple handicrafts, and the industrial employment agent's job is to demonstrate to employers the kinds of work that blind people can perform on regular jobs. Other occupations in which the totally blind were most concentrated were those of the social caseworkers, grade school and music teachers, vocational counselors, those in various braille occupations, and directors of private agencies.

[3] For occupations of blinded veterans, not in work with the blind, see Occupations of Totally Blinded Veterans of World War II and Korea, VA Pamphlet 7-10, January 1956. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., price 25 cents.

Education and Training

Of the more than 3,100 professional, administrative, and technical employees reporting the highest educational level they had attained, about 20 percent had a bachelor's degree only; another 37 percent had done some graduate work or had received additional degrees or specialized certificates. The high proportion of degree holders reflects the fact that a large proportion of all workers in the occupations covered were teachers. Since residential schools for the blind usually require their teachers to have valid teaching certificates from the appropriate State, a bachelor's degree would be essential, and a substantial number of the teachers had additional education. Other occupations where holders of college degrees were most numerous were social caseworkers, vocational counselors, school superintendents and principals, agency directors, and medical personnel.

On the other hand, almost 25 percent of all responding workers had no college education, including 3 percent who lacked even high school training. The bulk of the noncollege group was made up of those classified as technical workers—chiefly house parents, whose highest education was predominantly at the high school level.

While these data appear to show that there are some considerable opportunities in the field for persons with no education beyond high school, the picture comes into more accurate focus when the age of the less well-trained people is taken into account. More than half the employees with no college education were between 40 and 60 years of age and another fourth were 60 or over. Two-thirds of those with no high school

education were 50 or over. The definite correlation between higher age and lesser education indicates that young people who are thinking of entering this field should not assume that new openings will be available indefinitely to persons with little training. The older people now employed are mainly either people who have been in the field for a long time and whose specialized experience counts heavily, or people, such as housemothers, who have come into the work after their families are raised and whose practical experience with children makes them valuable even though they may have little academic training. The trend toward greater professionalization evident in all types of social service work is being encouraged by leaders in work for the blind. This means that young people who believe they could find satisfaction in this work need to plan for adequate training.

Earnings

Administrative occupations as a whole were the highest paid at the time of the survey, 1955, followed by professional and technical, as indicated in the accompanying table. However, even among technical workers, there were a few relatively well-paid occupations. Of these the guide-dog trainers were the highest paid, with a median of $378, plus maintenance in most cases, but only 19 such positions were reported, and this type of work is not likely to expand markedly.

Earnings in the most important occupations numerically will undoubtedly be of greatest interest to those planning a career. There was no important difference in earnings between grade school and secondary school teachers as a whole, although secondary school teachers of academic subjects earned, on the average, $25 a month more. Since a substantial proportion of all teachers are in residential schools, it is important to add that for residential school teachers maintenance is an additional factor in earnings; 20 percent get full maintenance and another 15 percent get partial maintenance. Almost three-fourths of all teachers were women.

Social caseworkers, another major occupation, had substantially higher median earnings than teachers, but only a few received any maintenance in addition to salary. These earnings are not substantially different from earnings for social workers generally, as reported in The Occupational Outlook, May 1957, page 41. Only 11 percent of the caseworkers did not have a bachelor's degree and of this small group 70 percent were 50 years of age or over. Those with a master's degree earned $36 more a month, on the average, than did those with a bachelor's degree. This occupation is an excellent illustration of the fact that for younger people entering this field professional training will be necessary for getting jobs, in the first place, and advanced training will be desirable from the point of view of added income. Nearly 80 percent of the social caseworkers were women.

In an occupation in which men predominate—vocational counselor—four-fifths were under 50 years of age, almost half had some degree of visual impairment, and more than 80 percent had at least a bachelor's degree. Of the college-educated group, about 85 percent were under 50. Median monthly earnings of all vocational counselors were $362, with over a third earning $375 or more.

Practically all of the 81 vending stand representatives and supervisors were men, and over half of them were under 45. Their median monthly earnings were $355 and $400, respectively. In these occupations, 70 percent had less education than a bachelor's degree, and 40 percent had no college education. Since these occupations require experience in operation of a retail business or as an accountant, agencies understandably stress practical business background rather than academic training.

In two other numerically important occupations, agency director and house parent, two-thirds and four-fifths, respectively, were 45 years of age or older. Interestingly enough, these occupations are near the opposite limits of the earnings range. Median monthly earnings of agency directors were $458

compared with $162 for house parents. Of course, half of the house parents received full maintenance and an additional 6-percent partial maintenance, whereas only a negligible number of agency directors received any compensation other than their cash salary. Weekly hours of house parents were very long, almost three-fourths of them working 50 hours or more a week on regular schedule. Although agency directors reported much shorter regular hours, they also reported long hours of uncompensated overtime.

Agencies cooperating in the survey reported comparatively few vacancies that they were actively seeking to fill and for which they had funds available in 1955. Most of the vacancies that did exist were in professional occupations in public agencies. Major needs were for grade school teachers, caseworkers, vocational counselors, and home teachers. Future opportunities in this area are bound to be greater than this situation in 1955 would suggest, however. Growing public awareness of the desirability of training handicapped people for a normal economic and social life, and interest among agencies serving the blind in expanding the vocational and wage-earning capacities of blind people should result in increasing opportunities for employment, especially in professional and certain technical occupations.

Monthly rate of cash salary or wages of full- and part-time professional, administrative, and technical staff members in work for the blind, selected occupations, September 1955

[Based on staff members' reports]

Occupation and type of agency	Total staff members reporting	Median monthly wage or salary	Number of staff members reporting monthly rate of cash salary or wages [1] of—													
			Under $167	$167 to $208	$209 to $229	$230 to $249	$250 to $270	$271 to $291	$292 to $312	$313 to $333	$334 to $354	$355 to $374	$375 to $416	$417 to $458	$459 to $499	$500 and over
PROFESSIONAL: [2]																
Total	1,911	$301	199	122	114	138	180	128	177	133	123	122	211	109	38	117
Teachers:																
Nursery and kindergarten	89	261	13	8	8	10	11	2	7	3	4	3	6	3	4	7
Grade school	380	293	28	34	30	37	36	26	38	30	20	7	46	14	12	22
Secondary school	106	304	6	3	5	3	17	10	17	13	7	4	9	1	2	9
Music	116	252	30	8	10	9	17	9	7	5	3	4	6	1	1	6
Physical education	38	255	1	6	4	7	6		4	4	1		2	1		2
Vocational training	77	262	14	6	9	5	9	2	8	3	6	3	8	2		2
Home economics	39	258	5	2	2	9	5	2	3	2	2	2	2		1	2
Arts and crafts	39	224	9	6	7	7	2	2	2			2	1	1		
Case work supervisors	49	425	2	1	1				1	1	1	6	10	11	3	12
Case workers	205	312	5	7	6	10	18	16	41	16	26	24	21	9	2	4
Vocational counselors	177	362			2		1	10	17	27	21	32	31	23	3	10
Placement workers	28	383								5	2	5	14	2		
Orientors	46	355	8	1	3		2	1		3	5	4	7	11	1	
Home teachers	197	263	18	18	16	28	31	31	13	6	13	14	7	1		1
Librarians	43	327	3	2	1	3	5	2	4	3	1	2	5	4	3	5
ADMINISTRATIVE: [2]																
Total	368	465	9	6	9	3	16	7	12	12	23	13	29	43	18	168
Superintendents of residential schools	31	578							1				3	6		21
Principals of residential schools	32	446			3		1	2		2	2	3		5	5	9
Directors of agencies for the blind	107	458	4	2	3	1	5	2	3	5	9	1	7	12	2	51
Supervisors of agency sections for the blind	27	539									1		1		2	23
Superintendents of work shops for the blind	15	505	1			1			1			1	1	1	1	8
Public relations directors	24	400				1	2	1	2	3	1		3	3	2	6
Treasurers	30	446						1	1		2	3	5	5		13
TECHNICAL: [2]																
Total	799	234	242	101	49	37	40	35	45	38	34	29	56	38	18	37
Braille typing instructors	20	221	5	3	3		4	2	1			1				1
Braille instructors	37	326	3	4	2		1	3	3	5			6	6	2	2
Supervisors of work shops for the blind	60	341	6	1	3	3	5	2	7	2	4	5	7	2	3	10
Supervisors of sections of work shops for the blind	51	302	6	2	3	6	4	2	5	2	5	2	3	10	1	
Instructors of work-shop employees	38	255	6	6	4	2	4	2	3	1	3	2	3		1	1
Home industry supervisors	15	334		1				1	4	1	2		2	2		2
Representatives, vending stands	57	355	1	2	1	1		3	5	8	7	6	14	6	1	2
Industrial employment agents	18	347					1		2	4	3	3	1		3	1
Braille transcribers and proof readers	22	138	13	3	2	1	1	1		1						
House parents	245	162	128	49	21	17	6	7	7	3	3	2	2			
Guide dog trainers	19	378					1	3	1	1	1	1	3	2	1	3

[1] Regular salary before taxes and other deductions, but excluding overtime. Does not include allowance for maintenance in those positions where maintenance is furnished.

[2] All totals include data for occupations not shown separately.

1956 INCREASE IN COLLEGE DEGREES REVERSES 1951-55 DOWNTREND

In the school year ending in 1956--for the first time since 1950--the total number of degrees and the number of bachelor's or other first-level degrees conferred by institutions of higher education showed an increase over the corresponding figures for the preceding year, according to the U. S. Office of Education. Between July 1, 1955, and June 30, 1956, 1,326 institutions in the United States (including outlying parts, i.e., Hawaii, Alaska, etc.) conferred a total of 379,641 earned degrees--representing an increase of 7.1 percent over the total conferred in 1954-55; first-level degrees granted totaled 311,298--an increase of 8.3 percent during the same period. In 1949-50, the peak year of the large veterans' education program following World War II, the total number of degrees was 498,586 (or 23.9 percent more than in 1955-56) and the number of first-level degrees was 433,734 (or 28.2 percent above the 1955-56 figures).

For the second consecutive year, the master's or other second-level degrees increased slightly. In 1955-56, the number increased over 1954-55 by 2.1 percent to reach a total of 59,440. The number of master's degrees conferred in 1955-56 is still less by 8.7 percent than the number conferred in the peak year 1950-51, but the ratio of second-level degrees to first-level degrees has increased steadily since 1950-51. In 1950-51, the number of second-level degrees was only 15 percent of the number of first-level degrees conferred 1 year earlier; in 1955-56, the percentage was 20.7.

The number of doctorates (excluding first professional doctor's degrees, such as M. D., D.D.S., and D.V.M.) increased slightly, to reach a total of 8,903 in 1955-56; in 1954-55, the number of doctorates was 8,840--a decrease of 1.7 percent the preceding year.

The largest numbers of bachelor's and first professional degrees were granted in the following fields: Education, business and commerce (excluding accounting), engineering, English, and history. These five fields accounted for more than two-fifths (43.5 percent) of all first-level degrees. Of the degrees in education, more than half were in elementary education.

In each of the past 5 years, more than half of all second-level degrees have been granted in education, engineering, and business and commerce (excluding accounting). Education alone has accounted for between 34.1 percent (in 1951-52) and 45.9 percent (in 1953-54) of the total degrees at this level.

Major fields at the doctoral level were education, chemistry, psychology, engineering, physics, and English. At this level, as well as at the master's or second-degree level, the majority of the degrees in education were in administrative and other nonteaching fields.

Men earned 64.1 percent of all bachelor's and first professional degrees, 66.3 percent of all master's degrees, and 90.1 percent of all doctorates. They received almost all the first degrees granted in engineering, about 90 percent of those granted in business and commerce (excluding accounting), and about 70 percent of those granted in history. Women earned 88.7 percent of the first degrees granted in elementary education, and 61.6 percent of those granted in English.

In 1955-56 the use of a new report form for the annual study of earned degrees conducted by the U. S. Office of Education provided data on 160 individual fields, as compared with 69 fields in 1954-55. The more detailed data will be very useful to counselors and others who have need of statistics on degrees earned in the individual fields now listed separately for the first time. For example, the category "education" previously included separate statistics on only

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two subfields: Industrial arts and physical education. In the 1955-56 report, the broad field of education is classified into 3 major groups with separate statistics on the following 25 individual fields: 15 specialized teaching fields, 7 general teaching fields, and 3 nonteaching fields.

The accompanying table, covering degrees granted in 69 fields was specially compiled by the U. S. Office of Education so that the 1955-56 statistics may be compared with those of 1954-55 and previous reports. Persons who want the detailed statistics on the 160 fields may obtain Earned Degrees Conferred by Higher Educational Institutions: 1955-56, Circular No. 499, from the U. S. Government Printing Office, Washington 25, D. C., price $1.25.

Earned degrees, by field of study and by level, 1955-56 and 1954-55

Field of study	Bachelor's and 1st professional degrees			2d-level (master's except 1st professional) degrees		Doctor's degrees	
	1955-56	1954-55	Percent change	1955-56	1954-55	1955-56	1954-55
ALL FIELDS	311,298	287,401	8.3	59,440	58,204	8,903	8,840
AGRICULTURE	7,286	7,170	1.6	1,467	1,364	398	507
Animal husbandry	1,786	1,158	54.2	248	132	76	72
Forestry	976	852	14.6	199	129	34	29
Agriculture--all other	4,524	5,160	-12.3	1,020	1,103	288	406
BIOLOGICAL SCIENCES[1] [2]	7,901	9,050	-12.7	1,654	1,609	1,004	994
Anatomy	43	75	(3)	56	29	38	37
Bacteriology	426	414	2.9	249	233	140	131
Biochemistry	48	144	-66.7	155	142	146	147
Biology	5,007	5,493	- 8.9	373	446	121	150
Botany	285	302	- 5.6	186	173	162	151
Entomology	78	61	(3)	106	116	62	66
Physiology	81	100	-19.0	102	88	62	57
Zoology	1,769	1,648	7.3	293	264	148	196
Biological sciences (n.e.c.)[4]	164	813	-79.8	134	118	125	59
EDUCATION[5]	57,571	53,254	8.1	27,356	27,620	1,438	1,470
Education[2]	45,355	43,208	5.0	25,190	25,844	1,278	1,356
Industrial arts	3,650	2,738	33.3	627	544	27	14
Physical education	8,566	7,308	17.2	1,539	1,232	133	100
ENGINEERING[6]	26,312	22,589	16.5	4,724	4,484	610	599
ENGLISH	14,406	13,099	10.0	1,892	1,669	382	341
FINE ARTS	18,280	16,317	12.0	3,968	3,184	316	256
Architecture	1,443	1,581	- 8.7	199	180	2	3
Music	6,995	6,339	10.3	2,069	1,677	122	68
Speech and dramatic arts	3,811	3,682	3.5	827	776	152	157
Fine arts (n.e.c.)[4]	6,031	4,715	27.9	873	551	40	28
FOREIGN LANGUAGE	3,941	3,548	11.1	857	789	235	187
Classical foreign languages	500	512	- 2.4	120	142	20	35
French	1,389	1,279	8.6	207	243	53	52
German	364	315	15.6	78	100	33	26
Spanish	1,323	1,206	9.7	237	227	32	39
Russian	69	60	(3)	25	21	9	9
All other modern foreign languages	296	176	68.2	190	56	88	26
GEOGRAPHY	651	626	4.0	161	141	46	48
HEALING ARTS AND MEDICAL SCIENCES[1]	22,251	23,299	- 4.5	1,300	1,750	152	189
Dentistry, D. D. S. only	3,009	3,099	- 2.9	-	-	-	-
Dental science	153	361	-57.6	121	116	5	-
Medicine, M. D. only[7]	6,853	7,056	- 2.9	-	-	-	-
Nursing[2]	5,315	5,240	1.4	240	550	-	3
Optometry[2]	352	524	-32.8	-	1	1	-
Osteopathy	466	460	1.3	7	5	-	-
Pharmacy	3,337	3,396	- 1.7	134	131	63	67
Public health	152	140	8.6	477	521	23	30
Veterinary medicine, D.V.M. or higher	910	855	6.4	29	28	15	6
Medical sciences (n.e.c.)[4]	1,704	2,168	-21.4	292	398	45	83

See footnotes at end of table.

Earned degrees, by field of study and by level, 1955-56 and 1954-55--Continued

Field of study	Bachelor's and 1st professional degrees			2d-level (master's except 1st professional) degrees		Doctor's degrees	
	1955-56	1954-55	Percent change	1955-56	1954-55	1955-56	1954-55
HOME ECONOMICS	7,791	7,250	7.5	821	705	49	61
JOURNALISM	2,436	2,218	9.8	182	286	6	16
LAW, LL.B or higher	8,285	8,226	0.7	427	373	27	22
LIBRARY SCIENCE	1,592	1,536	3.6	173	287	15	4
MATHEMATICS	4,660	4,034	15.5	898	761	235	250
MILITARY OR NAVAL SCIENCE	1,749	1,629	7.4	-	-	-	-
PHYSICAL SCIENCES[8]	11,672	10,516	11.0	2,655	2,544	1,667	1,713
Astronomy	19	11	(3)	14	13	23	16
Chemistry	6,178	5,920	4.4	1,164	1,173	986	1,005
Geology	2,195	1,795	22.3	517	507	141	154
Metallurgy	15	12	(3)	11	27	1	15
Meteorology	76	60	(3)	34	45	10	2
Physics	2,335	1,996	17.0	742	729	470	511
Physical sciences (n.e.c.)[4]	854	722	18.3	173	50	36	10
PHILOSOPHY[2]	2,668	1,774	50.4	267	231	82	84
PSYCHOLOGY[2]	5,665	5,532	2.4	973	1,293	634	688
RELIGION	8,146	7,713	5.6	1,089	1,274	217	210
Religious education and Bible	3,749	3,189	17.6	469	581	96	61
Theology	4,397	4,524	- 2.8	620	693	121	149
SOCIAL SCIENCES[9]	86,784	77,378	12.2	8,088	7,501	1,276	1,170
Basic[9]	30,277	27,666	9.4	3,065	3,090	1,020	963
Anthropology	308	280	10.0	78	87	47	44
Economics	6,938	6,364	9.0	753	617	293	241
History	10,891	9,540	14.2	1,157	1,199	274	310
International relations	554	449	23.4	166	215	33	20
Political science	5,670	5,500	3.1	509	498	203	181
Sociology	5,916	5,533	6.9	402	474	170	167
Applied	49,623	43,931	13.0	4,322	3,799	199	163
Business and commerce--Accounting	8,828	7,885	12.0	439	558	7	19
Business and commerce--All other	38,375	33,770	13.6	3,415	2,778	153	125
Public administration	650	386	68.4	318	265	30	12
Social work	1,770	1,890	- 6.4	150	198	9	7
Social sciences (n.e.c.)[4]	6,884	5,781	19.1	701	612	57	44
MISCELLANEOUS:							
Arts (without major)	4,547	6,400	-29.0	193	163	69	8
Science (without major)	5,872	3,707	58.4	146	117	13	4
Other	832	536	55.2	149	59	32	19

[1] Does not include psychology, which because of its multicategory nature has been listed independently.

[2] Data for 1955-56 are not strictly comparable with data for 1954-55; for discussion, see Circular 499, Earned Degrees Conferred by Higher Educational Institutions, 1955-56. Office of Education, U. S. Department of Health, Education, and Welfare, 1957.

[3] Not computed when the basic figure (1954-55) is smaller than 100.

[4] Not elsewhere classified.

[5] Students in secondary education generally major in particular subjects--such as English, history, mathematics--at the same time they are preparing to teach. Registrars were directed to classify degrees based on a teaching major in a particular subject-field--such as English, biology, physical sciences, business education, etc.--as degrees in English, biology, etc., and not as degrees in "education."

[6] For a breakdown of engineering degrees by field of specialization, see Circular No. 494, Engineering Enrollments and Degrees, 1956. Office of Education, U. S. Department of Health, Education, and Welfare, 1957.

[7] For discussion of apparent decrease between the 2 years, see Circular No. 499. (See footnote 2.)

[8] Does not include geography, which because of its multicategory nature, has been listed independently.

[9] Does not include geography, philosophy, or psychology, which because of their multicategory or comprehensive nature, have been listed independently--in alphabetic order.

WHAT INFLUENCES STUDENTS' DECISIONS TO GO TO COLLEGE?

It has been said that only about half of the students with the required ability actually do go to college. To examine the factors responsible for this apparent waste of intellectual resources, a study of more than 35,000 twelfth grade students in 516 schools was made in early 1955.[1] These students were given a short aptitude test designed to measure ability to succeed in college work and were asked to fill out a questionnaire. The school principals also filled our a questionnaire on the significant attributes of the school itself and of the community. The questionnaires were designed to elicit information about the number of students who planned to attend college, the factors affecting these plans, and the possibility of increasing the number of college students by financial support or other means.

Proportion of Students Planning To Go to College

The survey results support the supposition that many able young people do not develop plans for going to college. Not quite half the boys in the high ability group (the top 30 percent on the test scores) had unqualified plans for college attendance (table 1). Another 31 percent of these boys planned to work first and enter college later or to work while attending, but 1 out of every 6 had no interest in college or felt that attendance would not be possible. Among the girls in the high ability group, the proportion with unqualified plans for entering college was somewhat lower and the proportion with no expectation of enrolling was much higher than among the boys.

The relative numbers of students expecting to enter college naturally declined in the middle and low ability groups (approximately the second 30 percent and the lowest 40 percent, respectively, in the test scores). Nevertheless, 2 out of every 5 boys and 1 out of every 3 girls in even the low-scoring group reported plans for going to college immediately or eventually. This finding obviously raises a question as to the reality of these student's plans in terms of their mental capacity.

Factors Affecting College Plans

The students' family background was found to affect college plans, as one

Table 1. Percent distribution of seniors according to plans for college attendance, by ability level

Plans for college attendance	High scoring group	Middle scoring group	Low scoring group
BOYS	100	100	100
Going now	47	27	17
Work and go later	8	10	9
Part-time work and go	22	15	11
Full-time work and go nights	1	2	2
Interest only	4	7	7
No interest	12	35	49
Unable to classify	6	4	5
GIRLS	100	100	100
Going now	43	26	15
Work and go later	4	5	6
Part-time work and go	14	11	9
Full-time work and go nights	2	2	2
Interest only	8	11	10
No interest	20	41	53
Unable to classify	9	4	5

[1] Background Factors Relating to College Plans and College Enrollment Among Public High School Students: A Study Supported by a Grant from the National Science Foundation. Educational Testing Service (Princeton, New Jersey), April 1957. The study was conducted partly under the auspices of the College Entrance Examination Board.

would expect. Other things being equal, the students most likely to have plans for college enrollment were those whose fathers had a high level of education and were in a professional occupation. Factors related to money were important also. Students having more than two siblings were less likely to have college plans than those with one or no sibling; also, those who expected substantial support from their families were more likely to have college plans than those who said they expected little financial assistance. Support from the family was even more vital to college plans for the girls than for the boys.

Among the factors having to do with high school experiences, three which had a particularly high relationship to college plans were good grades, number of friends with college plans, and amount of discussion with teachers or guidance counselors. The findings with respect to the last-mentioned factor are probably of most direct interest to counselors. The proportion of boys and girls expecting to enroll in college rises sharply with the amount of discussion of college with school personnel. Undoubtedly, one reason for this finding is that students who hope to go to college are the ones most likely to seek advice on what college to select and how to qualify and apply. It is nevertheless significant that 52 percent of the high-scoring boys and 71 percent of the high-scoring girls who had not discussed college with school advisers did not plan to go to college. Evidently many students who had the ability to go to college were not receiving sufficient encouragement to do so.

Another finding of importance to counselors is that the high school programs in which the students were enrolled did not closely match their plans. Even in commercial and vocational programs, 58 percent and 41 percent of the high-scoring boys, respectively, planned to go to college. The proportion with college plans was surprisingly large also among the lower ability students in these programs.

A more personal impression of factors affecting college plans came from the responses made to the questionnaire items asking directly about the students' reasons for planning or not planning to go to college. On the positive side, the need for a college degree was the most popular questionnaire response for both boys and girls. Financial rewards, desire to explore different kinds of work, and enjoyment of study were other frequently expressed reasons for planning a college education. Among the reasons indicated for not planning college, financial reasons were very dominant.

Replies to questions on vocational aspirations and choice of field of specialization in college indicated great interest in the professions, particularly engineering. Over 50 percent of the high-scoring boys chose professions, whereas only 10 percent chose supervisory business occupations. One-quarter of the boys in the high-scoring group said they would like to become engineers. Even of the low-scoring boys, 15 percent said they would like to become engineers.

For an indication of the effect that a national scholarship program might have on college plans, attention is best directed to the high-scoring students who were not planning to go to college. More than half of the boys in this group said they would accept a fully paid college education in engineering. Almost half of them would accept full scholarships in the other scientific fields or in business, and 27 percent would accept a scholarship in education. The sciences seemed much less desirable to high-scoring girls. Their favorites were business, acceptable as a scholarship field to 66 percent, and education, acceptable to 38 percent.

College Enrollment Compared With College Plans

To find out the extent to which the college plans of high school seniors are carried out, a followup study was made

in the fall of 1955. The number of slips between college plans and college attendance was considerable. Only 65 percent of those who planned to go to college actually went, and 7 percent of those who did not plan to go to college went anyway. In the high-scoring group, 78 percent carried out their college plans. The study did not include a followup to find out how many students entered college after a greater lapse of time. Altogether, 36 percent of the boys and 27 percent of the girls in the sample had gone to college by the fall following their senior year at high school.

Most of the family background factors which had been found important in relation to college plans were found to be even more important in relation to actual college attendance. This was true also of factors such as scholarly interests and aspirations. Not only do these factors have the obvious effect on college plans, but, among students planning college, those who "enjoy studying" or "need a college degree" are very likely to carry out their plans. Those who desire to attend college because college graduates earn more money are less likely to go, and those who have athletic reasons in mind are least likely to go.

The followup study, of course, could not check on the responses to offers of hypothetical scholarships. To do this it would have been necessary to extend bona fide scholarship offers to the students. The findings as to the number of students in the high ability group who said they would accept scholarships but did not actually enter college are nevertheless of great significance. Translated into rough estimates covering all public school seniors in 1955, these findings suggest that some 150,000 high-caliber students, who would have gone to college had adequate financial support been offered to them, were lost to higher education.

SCHOLARSHIPS AND FELLOWSHIPS

Available at Institutions of Higher Education

U. S. Department of Health, Education, and Welfare
Office of Education, Bulletin 1951, No. 16 - Reprint 1956

This bulletin provides information on the more than 155,000 scholarships and fellowships available at colleges and universities throughout the country. For each institution reporting, information is given as to the number of grants to graduate and undergraduate students, the size of the grant to each recipient, and any limitations with respect to subject-matter field, sex, and other restrictions.

For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 70 cents.

YOUTH IN THE LABOR MARKET

Work Experience of Young People Leaving School in an Area of Limited Employment Opportunities

by Naomi Riches

A successful adjustment to work after leaving school is as important to young people as anything is likely to be in their whole lives. Their adjustment is also important to the guidance profession, which has a prime concern with the satisfactory transition of students from school to work; and to the Nation, since new entrants into the labor force must be able to meet the increasing demands of the economy for higher skills and greater productivity. But a persistently higher rate of unemployment among youth, compared with other age groups, is shown by many studies, suggesting that young people have special problems in getting and holding jobs during their early working years.

Within the past 2 years, the U. S. Department of Labor has initiated several studies of work and unemployment experience of young people. Some of these studies are being made in areas of chronic unemployment and some in expanding areas or in communities with only moderate labor surpluses. Young people who dropped out of high school before graduation and those who completed secondary school but did not continue their formal education beyond that point are being studied. It is these groups that enter the labor market between the ages of 16 and 20, when they seem to have special difficulty in making a satisfactory adjustment.

The first of the surveys, now completed, relates to Harrison County, W. Va., an area which has had a substantial labor surplus for a number of years and from which considerable proportions even of the adult labor force have migrated. It is a county whose agriculture tends toward subsistence farming; coal mining has been steadily declining. Its industry shows some diversification, with stone, clay, and glass the largest industry group, but there are few large plants of any type in the area. The population of the county has remained almost static over the past 15 years.

The Occupational Outlook for May 1957 carried a brief report on that part of the survey which concentrated on the background for work of young people in Harrison County who, between September 1951 and May 1955, either ended their schooling upon graduation from high school or who dropped out before finishing. The study, made with the cooperation of the County Superintendent of Schools and based on data from school records, found that almost three-fifths of the dropouts were age 17 or over at the time they left school, and almost two-thirds were 1 or 2 grade levels lower than normal for their age. Most graduates had completed several vocational courses but this was not true of the dropouts, who usually left school at grade levels at which only a few elementary courses could have been completed.

The present article deals with the actual work experience of 866 school-leavers selected to represent a 25-percent sample of all those who graduated from high school, and a 33-percent sample of all those who dropped out before graduating during the period September 1951 to May 1955. Personal interviews with these school-leavers were conducted by the staff of the Institute of Industrial Relations, West Virginia University. Interviewers obtained work histories from the date of leaving school until July 15, 1956, for the 448 school-leavers still living in the county at that time. The balance had left the county by the summer of 1956. For these "out-migrants," an interview was conducted with a family member or a neighbor, mainly to find out why they had left.

Among questions of primary importance were, "How many of these school-leavers wanted jobs, how many found jobs, and what kind of jobs were they?" These questions can be answered, of course, only for those who were in the county in the summer of 1956 and could be directly interviewed.

Of those interviewed, almost all who looked for work had found regular jobs (defined as jobs which lasted a month or more, full time or part time) during the survey period, with the graduates doing somewhat better than the dropouts. Lest too rosy a picture of the employment situation be suggested by this success, however, it should be emphasized that by the summer of 1956, half of all the school-leavers, boys and girls, had left the county. Three-fifths of the boy graduates and two-thirds of the boy dropouts were outmigrants, High proportions of both groups had gone into military service. About three-fifths of the boys who moved away had never worked in Harrison County before they left, and had they stayed would have substantially increased the pressure for jobs.

About one-third of the girl school-leavers had outmigrated by the summer of 1956; many of them left with either their husbands or parents who were seeking work. Those who were married might not have been in the labor force had they stayed. Despite this heavy outmigration, the rate of unemployment among the young workers who were in the county labor force in the summer of 1956 was still considerably higher than the national average for the same age group--13 percent compared with 8 percent.

Did those who remained and who looked for jobs in the county seek work promptly after leaving school, and did they have long periods of unemployment before getting their first regular job? About 50 percent of all graduates who looked for jobs obtained a regular job within 1 week after starting to look. Of the boy graduates who looked for jobs, 81 percent started looking within a month of graduation, and 54 percent of all who found jobs did so within a week. The girl graduates who regarded themselves as in the labor force took somewhat longer to begin looking for work and were less successful in finding jobs immediately.

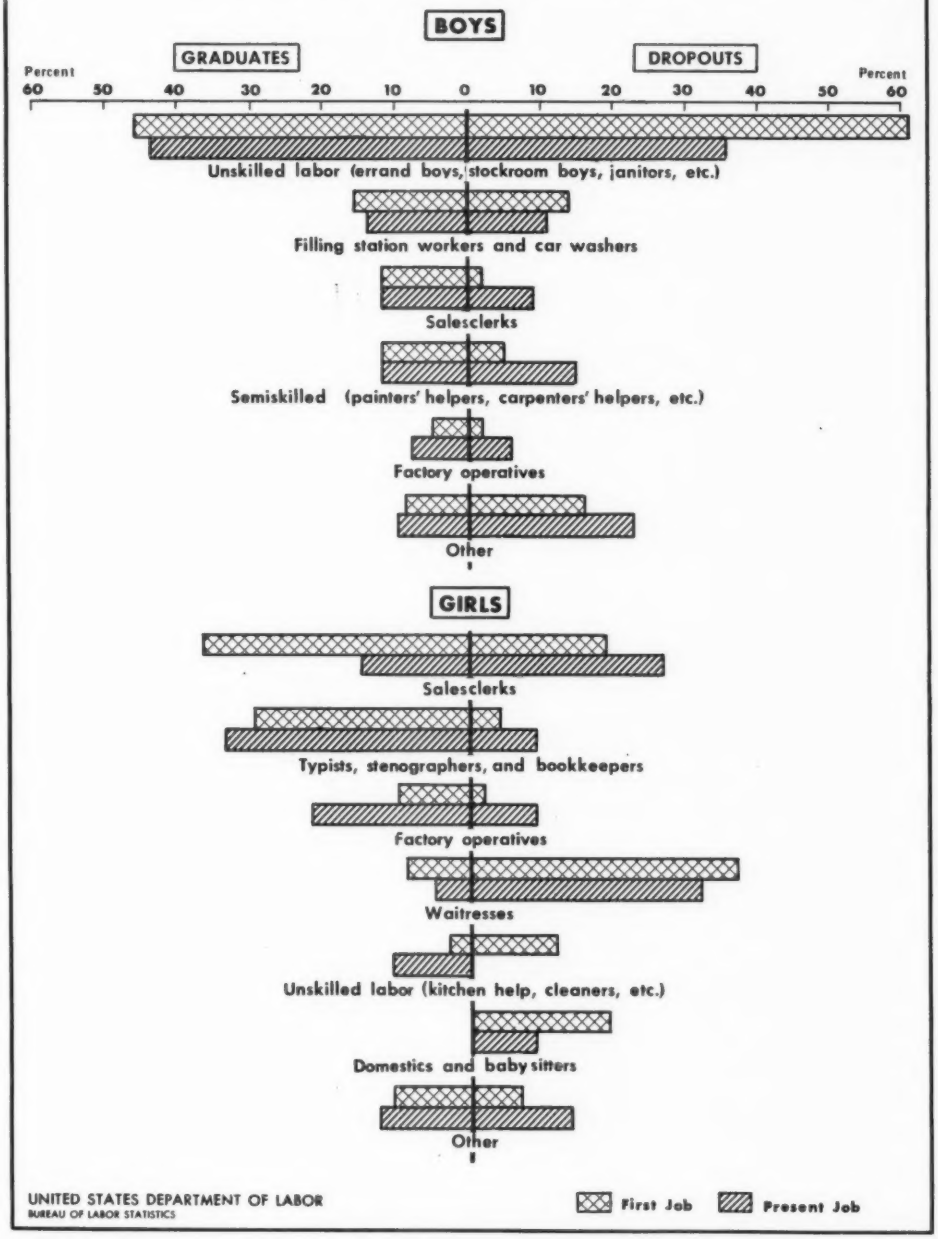
The dropouts were not as prompt in starting to look for work, nor were they as successful in finding jobs as the graduates. Only 41 percent of all dropouts who looked found regular jobs within 1 week. Seventy percent of the boy dropouts in the labor force started looking for work within a month after leaving school, and of all who found regular jobs only 37 percent found them in less than

Table 1. Labor force adjustment of school-leavers in Harrison County, West Virginia, by sex

Item	Boys				Girls			
	Graduates		Dropouts		Graduates		Dropouts	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
In county	80	--	66	--	202	--	100	--
In labor force	79	100	64	100	186	100	57	100
Found regular jobs	76	96	57	89	180	97	51	89
Looked but did not find regular jobs	3	4	7	11	6	3	6	11

Chart I.

Distribution of First and Present (July 1956) Regular Jobs of Those Leaving School During 1951-55



a week. It took from 10 weeks to more than a year for another 37 percent to find regular jobs. Of the girl dropouts who looked for jobs, only 51 percent started looking within a month after dropping out, but of all who found jobs, 56 percent found them within a week after starting to look. The slowness of both boy and girl dropouts in starting to look for work bears out other evidence, noted later, that going to work is a minor motive for dropping out of school.

What were the first jobs of these school-leavers? Almost 50 percent of the boy graduates and 61 percent of the boy dropouts found their first employment in such unskilled jobs as janitors, cleanup men in factories, stock boys, and errand boys. Sixteen percent of the boy graduates and 14 percent of the boy dropouts found first employment in such other unskilled occupations as filling station attendants or car washers.

In the Occupational Outlook for May 1957, it was pointed out that virtually every graduate not going to college had completed some vocational courses, whereas a much smaller proportion of the dropouts had done so. The advantage of high school graduation and vocational training shows up most clearly among the girls. For example, 30 percent of the girl graduates, but only 4 percent of the girl dropouts, in the labor force had first jobs as typists, stenographers, or bookkeepers. Almost 40 percent of the girl dropouts found their first jobs as waitresses.

The distribution of present jobs, that is, in July 1956, is intended as descriptive of the present employment situation rather than as a basis for comparison with the first jobs. It is not intended to show progress or lack of progress in job types for the same individuals. For example, by the summer of 1956 many of the girls, especially the dropouts, had withdrawn from the labor force because of marriage.

The nature of the economic activity in the area and the limited opportunities for skilled work, undoubtedly restrict the chance for young people to progress from less skilled to more skilled occupations. Among those employed in the summer of 1956, the first job and the present job were identical for 43 percent of the boy graduates, 41 percent of the girl graduates, 30 percent of the boy dropouts and 36 percent of the girl dropouts. For the many recent school-leavers included in the survey, this would be expected.

The proportion of school-leavers who had been employed continuously from the date of graduating or dropping out to July 1956 is of considerable interest in measuring stability of employment. Among those who had ever had a regular job, the graduates had a higher proportion of workers continuously employed than the dropouts, and the boys a higher proportion continuously employed than the girls. The girl dropouts had the most irregular employment pattern of all. Most of those continuously employed had been on one job only.

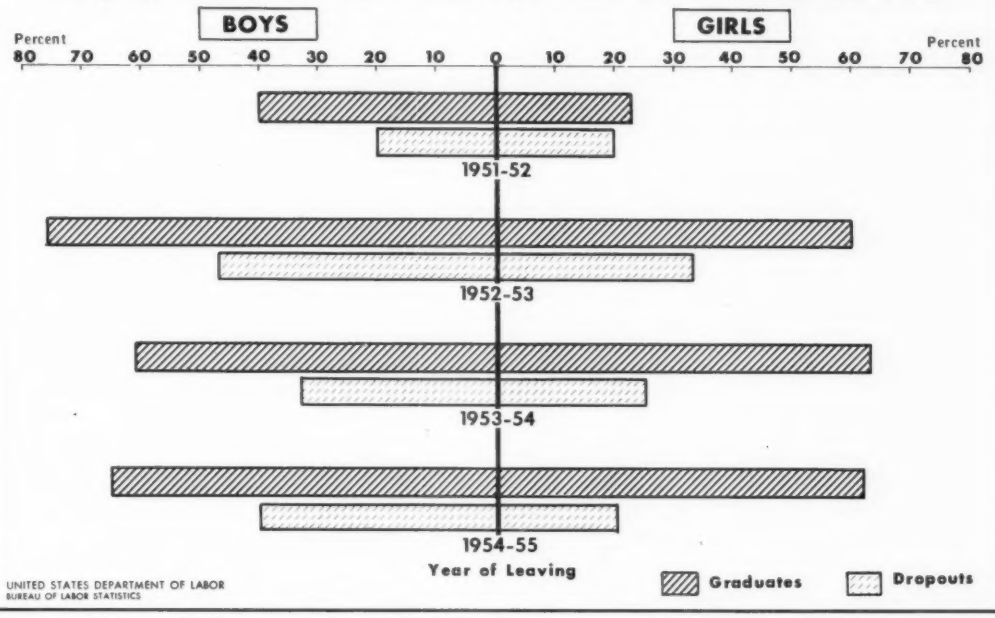
The interview schedules asked for weekly wage amounts only for the job held in the summer of 1956. Table 2 shows that high school graduation does make a difference in earnings. The boy graduates have a median wage of $65 a week and the boy dropouts a median wage

Table 2. Percentage distribution of school-leavers by weekly wage in present job (July 1956) by sex

Weekly wage	Boys		Girls	
	Graduates	Dropouts	Graduates	Dropouts
Median	$65	$52	$44	$26
Total	100	100	100	100
Less than $30..	1	4	20	63
$30 - $39	3	15	16	14
$40 - $49	17	28	30	9
$50 - $59	19	19	20	5
$60 - $69	21	9	7	9
$70 - $79	13	9	5	--
$80 - $89	7	10	2	--
$90 and over...	19	6	--	--

Chart 2.

Proportion of School-Leavers, 1951-55, With Continuous Employment to July 1956, by Year of Leaving and Sex



UNITED STATES DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS

of $52. There is an even larger difference in the median wage of the girl graduates and dropouts--$44 for the graduates and $26 for the dropouts. The wages of this latter group may have been somewhat understated since about one-third of them were waitresses and it may be that tips were underreported in their income. About 40 percent of the boy graduates and 26 percent of the dropouts were earning $70 or more a week. Only 7 percent of the girl graduates and none of the girl dropouts were earning this much. The greatest difference in wages was between the boys as a group and the girls as a group. The boy dropouts were earning more than the girl graduates and their median wage was twice that of the girl dropouts.

In an effort to discover any possible relationships between work experience and school experience, dropouts were asked why they left school before finishing. Only about 20 percent of the boys and 5 percent of the girls gave "going to work" as a reason for dropping out, and the fact that many did not begin looking for work immediately, as noted above, underscores the relative unimportance of "going to work" as a reason for leaving school. Then, except for the 33 percent of the girls who gave marriage as the reason, why did these young people want to leave school?

Forty-four percent of the boy dropouts and 34 percent of the girl dropouts gave "adverse school experience" as their reason for leaving. Of all the dropouts who gave this reason and for whom I.Q.'s were reported, 35 percent had I.Q.'s below 85. These students are admittedly handicapped for successful work at the secondary school level and may understandably have reported "adverse school experience" as their reason for leaving. On the other hand, 23 percent of all dropouts who gave "adverse school experience" as their reason for leaving had I.Q.'s of 100 or more--usually adequate for successful work in high school.

It is interesting to examine the answers to the survey question, "In what ways could your school have been more useful to you?" This question was asked of both graduates and dropouts. No answers were suggested by the interviewers. Half the boys and girls offered an opinion. The largest group who had opinions were those who wanted a "better curriculum" or more "math, science, foreign languages, industrial arts, or commercial courses"--22 percent of both sexes combined. It was the boys who asked for more math, science, and industrial courses, and the girls wanted more foreign languages and commercial courses. Six percent of all school-leavers interviewed asked for more vocational counseling. Better teaching and better class management (discipline) were asked for by 11 percent of all school-leavers. Only 3 percent asked for more recreational facilities.

Many other studies of school-leavers, usually of dropouts only, resulted in findings quite similar to those in Harrison County. In these studies also the need to go to work was not found to be a major reason for leaving. More important reasons were poor achievement and dissatisfaction with school. These are primarily educational problems. The Bureau of Labor Statistics has placed most emphasis on the work experience of school-leavers. When the Bureau's comparable studies in five other areas have been completed, it is hoped that some general conclusions can be drawn about the labor force adjustment of these young people.

APPRENTICESHIP IN THE BUILDING TRADES

by Carl W. Easton
Bureau of Apprenticeship and Training

The construction industry in the United States provides employment to a sizable portion of the labor force. In 1950, nearly 2 million skilled workers, or about 1 in 4 of all skilled craftsmen employed in the United States, were working in this industry.

These skilled workers--or "journeymen" as they are more commonly known--must possess manual skill and dexterity coupled with technical knowledge or trade theory in order to produce work of satisfactory quality in adequate amounts. Many workers, particularly in periods of acute labor shortage, acquire the necessary skill and knowledge informally. They begin work as "helpers" and acquire their skill and knowledge by observing the journeymen whom they assist. The most effective way, however, to develop skill and acquire knowledge in the building trades is through program or planned apprenticeship. Persons who complete an apprenticeship are more certain of entry into a skilled trade and are more likely to advance to supervisory positions.

*The discussion of opportunities for apprentices presented in this article supplements the more general analysis of employment outlook which appears in the chapter on the Building Trades in the new edition of the Occupational Outlook Handbook. If desired, this article may be clipped and inserted in the Handbook following page 282 or filed with a reprint of the Building Trades chapter.

Table 1. Number of registered apprentices in the principal construction trades, in the United States as of December 31, 1951-56

Trade	1956	1955	1954	1953	1952	1951
Total	112,821	101,412	89,913	[1]90,987	[2]87,751	[3]91,048
Bricklayer, stonemason, and tilesetter	13,817	9,049	8,072	8,692	8,903	9,455
Carpenter	26,667	26,740	22,568	23,967	24,071	27,161
Cement mason	1,400	1,038	774	796	770	785
Painter (construction)	4,884	4,599	3,932	3,774	3,871	4,323
Plasterer	2,583	2,340	2,155	3,493	3,771	4,239
Plumber, pipefitter	22,369	21,668	20,061	17,520	16,671	17,309
Roofer, slater	1,642	1,269	1,063	1,485	1,230	819
Glazier	1,220	939	735	963	861	924
Sheet-metal worker	11,849	10,712	9,627	10,115	9,132	9,386
Structural-iron worker	3,639	2,826	2,352	1,944	1,317	815
Electrician (construction)	18,887	17,126	16,136	15,670	14,611	12,884
Construction (not elsewhere classified)[4]	3,864	3,106	2,438	2,568	2,543	2,948

[1] Data included for New York were estimated.
[2] Data included for New York and Connecticut were estimated.
[3] Data included for New York, Connecticut, and Florida were estimated.
[4] Includes operating engineer, floor layer, lather, asbestos worker.

SOURCE: Bureau of Apprenticeship and Training, U. S. Department of Labor.

An "apprentice" is a worker who learns, according to a written agreement, a recognized skilled trade requiring 2 or more years of work experience on the job, supplemented by appropriate related trade instruction. A "registered" apprentice is one who is covered by a plan registered by the employer with the Bureau of Apprenticeship and Training of the U. S. Department of Labor or a State apprenticeship agency in those States which have such agencies. By registering the system, an employer agrees to train apprentices under adequate standards to produce all-round skilled workers according to a plan that provides for maintenance of progress records, for related trade instruction, and for the issuance of certificates upon successful completion of the apprenticeship. While it is recognized that many apprentices are adequately trained in programs that have not been registered with an apprenticeship agency, it is probable that a greater percentage of building trades apprentices are trained under registered systems than in the other major industry groups. It will be noted from table 1 that the number of registered apprentices in the construction trades has been increasing since 1954.

To qualify for entry into an apprenticeship an applicant must be at least 16 years of age. The maximum age limit varies widely among occupations and employers, but is almost always waived for those applicants who are war veterans. While it is not always a requirement that applicants for trade apprenticeships be high school graduates, there is a growing tendency to establish high school graduation as a basic requirement for candidates. Even where it is not required, it is a distinct advantage to have graduated from high school. A study of almost 3,300 apprentices who completed their trade training in 1950 indicated that 57 percent were high school graduates, 31 percent had some high school training, and only 12 percent failed to go beyond elementary school. In order to learn the mathematics and trade science related to most of these trades, it is usually a decided advantage for applicants to have a better than average ability in the field of mathematics. Frequently mathematical calculations must be made in performing tasks of the trade, estimating materials requirements, or estimating time and cost factors.

The length of the apprenticeship which must be served to become a journeyman in the building trades varies from 2 years for structural-iron workers and roofers to 5 years for plumbers, pipefitters, and electricians. The on-the-job training is supplemented by classroom instruction or, in some cases, correspondence school courses. Such instruction typically includes mathematics related to the trade, mechanical or architectural drawing, and trade science.

Over the period 1950-56, some building trades have rather consistently failed to train sufficient apprentices to offset the losses of journeymen arising from death, disability, and retirement. This is especially true of the carpenters, structural-iron workers, and painters, paperhangers, and glaziers (table 2). However, in the case of the painters, paperhangers, and glaziers, technological and other changes have reduced the number required in recent years so that the failure to train new workers in numbers sufficient to replace older workers lost to the industry has less serious implications than it has for carpenters and structural-iron workers.

Assuming that a reasonably high level of activity will be maintained in the construction industry during the foreseeable future, it is obvious that greater numbers of young workers must be trained if the labor demands of the industry are to be met satisfactorily. Employment opportunities in apprenticeship programs in the construction trades should be quite bright during the coming years. This is especially true of the carpenter trade. Numerically, this is the largest construction craft and it is basic to all forms of construction. A steady influx of new, fully trained workers to this craft is essential to the future welfare of the construction industry as a whole.

Table 2. Comparison of number of apprentices and journeymen in selected building trades, 1950-56[1]

Year (as of July 1)	Bricklayer[2]	Carpenter	Electrician	Ironworker	Painter, paperhanger, glazier	Plasterer and cement mason	Plumber and pipefitter	Roofer[3]	Sheetmetal worker
	Active journeymen per apprentice[4]								
1950	6.9	14.6	5.2	21.9	29.1	7.7	8.2	8.9	6.6
1951	7.4	13.6	6.5	14.8	31.7	8.6	9.5	6.9	8.2
1952	10.6	23.1	8.4	14.0	37.0	10.6	9.6	6.8	7.7
1953	11.0	25.0	7.7	13.0	40.9	11.2	9.8	8.4	8.7
1954	12.4	28.2	7.7	17.0	37.2	14.9	9.9	8.6	8.6
1955	12.1	27.2	8.6	21.8	32.7	14.4	9.9	6.9	8.2
1956	11.3	21.6	7.7	20.3	30.5	12.6	9.9	8.0	7.0
	Apprenticeship completions per 1,000 active journeymen[5]								
1950	43	16	44	18	9	29	15	45	43
1951	69	16	45	21	11	42	27	51	35
1952	32	8	38	18	5	27	29	43	33
1953	24	7	34	14	7	19	18	36	22
1954	31	5	29	18	9	19	17	31	22
1955	27	6	28	19	7	21	18	31	23
1956	23	8	37	17	6	17	22	41	27
	Journeymen losses per 1,000 active journeymen[6]								
1950	16	10	17	18	10	17	15	25	14
1951	16	13	15	23	27	20	18	34	22
1952	19	14	13	16	18	16	18	27	13
1953	16	14	16	18	37	17	18	28	11
1954	18	12	16	25	15	27	17	28	14
1955	20	11	20	19	18	17	21	27	17
1956	19	18	20	20	18	22	22	32	12

[1] Based on data collected by the Bureau of Labor Statistics from building trades unions in 52 cities with 1950 population of 100,000 or more.

[2] Includes marble setter, mosaic terrazzo layer, stonemason, and tile setter.

[3] Roofer: Composition, slate, and tile.

[4] The ratio of the number of journeymen working or available for work, to the number of persons working under apprenticeship agreements.

[5] The ratio of the number of persons who completed the prescribed apprentice training during the previous 12 months, to the number of active journeymen on July 1 of the specified year.

[6] The ratio of the number of journeymen who became unavailable for work because of death, permanent disability, or retirement during the previous 12 months, to the number of active journeymen on July 1 of the specified year.

A young man who wants to become an apprentice in the building trades should apply to a local employer or the local union of the trade in which he is interested. The local office of the U. S. Employment Service will be able to direct him to the proper person to be contacted.

The building trades offer better than average possibilities to those who are interested in becoming apprentices and are ambitious to advance to positions beyond the journeyman level. In a Bureau of Apprenticeship and Training study,[1] it was found that 6 years after completing apprenticeship, more than one-fourth of the workers studied had advanced beyond the journeyman level. This study indicated that nearly 15 percent of former apprentices in the mechanic and repair trades and the construction trades were working in their own businesses. In contrast, only 4 percent of those in the metalworking and printing trades were self-employed. In addition, numerous former apprentices were employed as foremen or job superintendents.

[1] Career Patterns of Former Apprentices, U. S. Department of Labor, Bureau of Apprenticeship and Training, July 1957.

The interesting possibilities of ultimate self-employment for apprentices in various construction trades is revealed by 1950 Census of Population figures. These figures indicate that 31 percent of painters; 18 percent of carpenters; 16 percent of plasterers, cement masons, and plumbers; 15 percent of brick masons; and 10 percent of electricians were self-employed. However, only 6 percent of the sheet-metal workers and 2 percent of the structural-iron workers were self-employed. These statistics seem to indicate that the construction trades field offers excellent opportunities for those who aspire to be operators of their own small enterprises. Very few firms in the building trades employ as many as 20 people.

For the young man who has manual talents and an interest in constructing things with his hands, becoming apprenticed in a building trade can lead to an excellent source of livelihood. Not only does the man with highly developed manual skills enjoy the respect of his fellow men, but he may have the satisfaction of seeing a building, a bridge, a dam, or a highway come into existence as he works; and, thereafter, always experience a feeling of accomplishment whenever he views a structure which he has helped to build. Moreover, learning a trade affords the apprentice the feeling of security that comes to those who know that they possess certain skills which cannot be destroyed, and which afford the means for general advancement and progress in life.

AIRLINE JOB OPPORTUNITIES, 1957-60*

by James J. Treires

The addition of about 450 new aircraft to the civil air transport fleet in the 1957-60 period will open up thousands of skilled jobs with the airlines. Estimates of these employment increases were made in a study of the manpower requirements of the civil air transport industry prepared by the U. S. Department of Labor's Bureau of Labor Statistics for the Interdepartmental Aviation Manpower Committee in early 1957. This analysis was based on the size and character of the air transport fleet that will be in service each year through 1960. Because of the 3- to 4-year lag between the ordering and delivery of new aircraft, it is possible to make such projections with considerable accuracy. Employment requirements derived from these employment projections are, therefore, good indicators of the extent of job opportunities in the air transport industry in the near future.

Almost 1,800 planes were operated by United States airlines in early 1957; about 720 of these were 4-engine aircraft. Almost all of the approximately 450 new aircraft which will be added to the fleet during the 1957-60 period will be new types of 4-engine planes with greater passenger capacity than the aircraft now in use. More than 100 of the new planes will be powered by turboprop engines and more than 150 will have jet engines. To operate and maintain these larger and more complex planes, the airlines will require a great many additional skilled workers. The following table shows how employment in five of the largest airline occupations is expected to grow in the years ahead.

Estimated end-of-year employment in selected air transportation occupations, 1956-1960

Occupation	1956	1957	1958	1959	1960
Pilots and copilots	14,050	15,400	15,600	16,950	17,650
Flight engineers	2,600	3,200	3,350	4,000	4,350
Stewardesses	8,800	9,600	9,800	11,000	11,550
Dispatchers	1,400	1,540	1,560	1,700	1,760
Mechanics	34,300	39,500	40,700	48,850	54,100

Some of the factors considered in making these projections and their major implications for persons considering these career fields are discussed in the following sections. A short discussion of the mobilization plans of the industry is also included.

Pilots and Copilots

In early 1957, the scheduled airlines employed about 8 pilots and copilots (4 crews) for every aircraft they operated. Although the new planes will carry more passengers and will fly faster, it is expected that they will be

* The analysis of short-run employment prospects presented in this article supplements the more general discussion of employment outlook which appears in the chapter on Air Transportation Occupations in the new edition of the Occupational Outlook Handbook. If desired, this article may be clipped and inserted in the Handbook following page 409 or filed with a reprint of the Air Transportation chapter.

operated for about the same number of hours per day (an average of 7 1/2) as current aircraft and will require about the same number of pilots.

The big increases in demand for pilots in 1959 and 1960 will result from large numbers of the new jet and turboprop aircraft coming into service. In addition to hiring new pilots to operate the larger fleet, the airlines will have to retrain some of their present pilots in the techniques of flying jet and turboprop planes. As a result, the airlines will use many more pilots as instructors. Licensed pilots who have had experience on 4-engine aircraft will be in great demand.

Flight Engineers

Flight engineers, who assist pilots by assuming responsibility for the proper functioning of the aircraft and its engines during flights, are carried on all 4-engine planes which have a gross takeoff weight of more than 80,000 pounds. Since most of the new planes will be of this type, many additional flight engineers will be required. Some airlines prefer to fill openings for flight engineers by giving skilled mechanics additional training; others give preference to men who can qualify as licensed pilots.

Stewardesses

Stewardesses are carried on all commercial passenger flights to attend to the comfort of passengers. A few airlines employ stewards, particularly on overseas flights. Most 2-engine and 4-engine planes on coach flights usually have only 1 stewardess. First-class flights on 4-engine planes usually carry 2 stewardesses; some of these flights, especially on international runs, carry 3 stewardesses.

Because most of the new aircraft coming into the fleet will be large planes, with passenger capacities up to 40 percent greater than the largest planes now in use, the need for stewardesses will probably increase more than proportionally. For example, most first-class flights on 4-engine planes currently carry 2 stewardesses who serve about 60 passengers; the new planes will probably have 3 stewardesses to serve 80 to 90 passengers. Opportunities for obtaining jobs as stewardesses will consequently be especially favorable in 1959 and 1960, when most of the new aircraft will be delivered. However, there will continue to be keen competition for these jobs, which are exceptionally attractive to young women.

Dispatchers

Dispatchers control all flights within their assigned area. Stationed at airline terminals, they analyze weather information, approve flight plans, and keep captains informed of weather and other conditions affecting their flights. This small group of highly skilled employees will grow moderately during the next few years, as new aircraft are put into service and schedules are expanded to meet the increased demand for transportation. Most openings will be filled by promoting experienced assistant dispatchers.

Mechanics

Since most of the new aircraft which will be added to the fleet in 1958, 1959, and 1960 will be larger and more complex than the planes currently in use, maintaining them will require a more than proportional increase in employment of mechanics. The sharpest rise is expected in the last two of these years, when the jet-engine aircraft will be used in large numbers.

Additional mechanics will be required in both overhaul and line maintenance work. Slightly more than half of the airplane mechanics employed by the scheduled airlines work at the main overhaul bases reconditioning and overhauling aircraft and engines. The remaining mechanics perform line maintenance at airports served by the air-

line, making minor repairs and checking the airworthiness of all parts of the plane before every takeoff. For both types of jobs, the airlines prefer young high school graduates who have had training in a CAA-approved mechanic school or experience in maintaining aircraft in the Armed Forces. Some airlines hire young men as apprentices and train them in a 4-year program of instruction and work experience.

Changes in Air Transport Operations Under Mobilization

Under current mobilization plans, the air transportation industry will convert immediately to a wartime basis on M-Day. The plans call for certain designated aircraft to be assigned to the Civil Reserve Air Fleet (CRAF), which will be divided into Atlantic and Pacific divisions. The CRAF will consist of 4-engine aircraft exclusively and will be used to augment the Military Air Transport Service on overseas flights. The route structure, bases, and other aspects of CRAF operations have been planned in detail and are theoretically ready for immediate implementation on M-Day. It is also planned that the airlines will supply personnel to operate CRAF planes and perform line maintenance on them.

All airline planes in existence on M-Day which are not assigned to the CRAF will be operated by the carriers to provide air transportation for high priority passengers and cargo. This program, which is designated as the War Air Service Pattern (WASP), is not planned in the same detail as the CRAF program. It is assumed that its operations and route structure would be similar to those of the airlines in peacetime. WASP aircraft, like the CRAF planes, will be operated on a 10-hour day basis, compared with an average 7 1/2-hour day in peacetime.

If mobilization should occur at any time during the next several years, the increase in requirements for air transportation workers over peacetime employment at that time would be moderate in most occupations. The only drastic increase in requirements would be for navigators, of whom only a few hundred are employed in the 1957 peacetime fleet; under mobilization, an additional 240 percent would be needed, owing to the increased amount of overseas flying. Requirements for pilots would increase by only about 2 percent under mobilization; for flight engineers, about 8 percent; and for mechanics and dispatchers, about 11 percent. The need for stewardesses would actually decline somewhat under mobilization.

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